

SEQUENCE LISTING

<110> Harper, Jeffrey W.
Elledge, Stephen J.

<120> F-BOX PROTEINS AND GENES

<130> BCM-03510

<140>
<141>

<150> 08/951,621
<151> 1997-10-16

<160> 60

<170> PatentIn Ver. 2.0

<210> 1
<211> 42
<212> PRT
<213> Homo sapiens

<400> 1
Leu Pro Ala Arg Gly Leu Asp His Ile Ala Glu Asn Ile Leu Ser Tyr
1 5 10 15

Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu Leu Val Cys Lys Glu Trp
20 25 30

Tyr Arg Val Thr Ser Asp Gly Met Leu Trp
35 40

<210> 2
<211> 126
<212> DNA
<213> Homo sapiens

<400> 2
ctggccagtc ggggatttga tcatattgct gagaacattc tgtcataacctt ggatgc当地 60
tcactatgtg ctgctgaact tgttgcaag gaatggtacc gagtgacctc tcatggcatg 120
ctgtgg 126

<210> 3
<211> 38
<212> PRT
<213> Homo sapiens

<400> 3
Leu Pro Lys Glu Leu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val
1 5 10 15

Thr Leu Cys Arg Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala
20 25 30

Leu Asp Gly Ser Asn Trp
35

<210> 4
<211> 114
<212> DNA
<213> Homo sapiens

<400> 4
ttacccaaag aacttctgtt aagaatattt tccttcttgg atatacgtaac tttgtgccga 60
tgtgcacaga tttccaaggc ttggAACATC ttagccctgg atggaAGCAA ctgg 114

<210> 5
<211> 38
<212> PRT
<213> Homo sapiens

<400> 5
Leu Pro Tyr Glu Leu Ile Gln Leu Ile Leu Asn His Leu Thr Leu Pro
1 5 10 15
Asp Leu Cys Arg Leu Ala Gln Thr Cys Lys Leu Leu Ser Gln His Cys
20 25 30
Cys Asp Pro Leu Gln Tyr
35

<210> 6
<211> 71
<212> DNA
<213> Homo sapiens

<400> 6
ctacccatag agcttattca gctgattctg aatcatctta cactaccaga cctgtgtaga 60
tttagcacaga c 71

<210> 7
<211> 38
<212> PRT
<213> Mus musculus

<400> 7
Leu Pro Tyr Glu Leu Ile Gln Leu Ile Leu Asn His Leu Ser Leu Pro
1 5 10 15
Asp Leu Cys Arg Leu Ala Gln Thr Cys Arg Leu Leu His Gln His Cys
20 25 30
Cys Asp Pro Leu Gln Tyr
35

<210> 8
<211> 114
<212> DNA
<213> Mus musculus

<400> 8
ctaccatag agtcattca actgattctg aatcatctt cactaccaga cctgtgtaga 60
tttagccaga cttgcaggct tctccaccag cattgtgtg atccctctgca atat 114

<210> 9
<211> 38
<212> PRT

<213> Homo sapiens

<400> 9

Leu Pro Thr Asp Pro Leu Leu Leu Ile Leu Ser Phe Leu Asp Tyr Arg
1 5 10 15

Asp Leu Ile Asn Cys Cys Tyr Val Ser Arg Arg Leu Ser Gln Leu Ser
20 25 30

Ser His Asp Pro Leu Trp
35

<210> 10

<211> 114

<212> DNA

<213> Homo sapiens

<400> 10

ctgcccaccc atccccctgct cctcatctta tccttttgg actatcgaaa tctaataaac 60
tggtgttatg tcagtcgaag acttagccag ctatcaagtc atgatccgct gtgg 114

<210> 11

<211> 38

<212> PRT

<213> Mus musculus

<400> 11

Leu Pro Thr Asp Pro Leu Leu Leu Ile Val Ser Phe Val Asp Tyr Arg
1 5 10 15

Asp Leu Ile Asn Cys Cys Tyr Val Ser Arg Ser Val Ser Gln Leu Ser
20 25 30

Thr His Asp Pro Leu Trp
35

<210> 12

<211> 114

<212> DNA

<213> Mus musculus

<400> 12

ctaccaccc accctctgct cctcatagta tccttcgtgg actacaggaa cctaataaat 60
tggtgctatg ttagtcgaag cgtagccag ctatcaactc atgatccact gtgg 114

<210> 13

<211> 38

<212> PRT

<213> Homo sapiens

<400> 13

Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu Asn Pro Gln
1 5 10 15

Glu Leu Cys Arg Cys Ser Gln Val Ser Met Lys Trp Ser Gln Leu Thr
20 25 30

Lys Thr Gly Ser Leu Trp
35

<210> 14
<211> 113
<212> DNA
<213> Homo sapiens

<400> 14
cttcctcctg aggtaatgct gtcaatttc agctatctt atcctaaga gttattcgat 60
gcagtcaagt aagcatgaaa tggctcagc tgacaaaaac gggatcgctt tgg 113

<210> 15
<211> 38
<212> PRT
<213> Mus musculus

<400> 15
Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu Asn Pro Gln
1 5 10 15
Glu Leu Cys Arg Cys Ser Gln Val Ser Thr Lys Trp Ser Gln Leu Ala
20 25 30
Lys Thr Gly Ser Leu Trp
35

<210> 16
<211> 114
<212> DNA
<213> Mus musculus

<400> 16
cttcctcctg aggtaatgct gtcattttc agttacctta atcctaaga attgtgtcgg 60
tgttagtcaag tcagtactaa gtggctcag ctggaaaaa caggatctt gtgg 114

<210> 17
<211> 41
<212> PRT
<213> Homo sapiens

<400> 17
Leu Pro Leu Glu Met Leu Thr Tyr Ile Leu Ser Phe Leu Pro Leu Ser
1 5 10 15
Asp Gln Lys Glu Ala Ser Leu Val Ser Trp Ala Trp Tyr Arg Ala Ala
20 25 30
Gln Asn Ala Leu Arg Glu Arg Leu Trp
35 40

<210> 18
<211> 123
<212> DNA
<213> Homo sapiens

<400> 18
ctgcccctgg agatgctcac atatattctg agttcctgc ctctgtcaga tcagaaagag 60
gcctccctcg tgagttggc ttggtaaccgt gctgccaga atgcccctcg ggagaggctg 120
tgg 123

<210> 19
<211> 35
<212> PRT
<213> Homo sapiens

<400> 19
Leu Pro Pro Glu Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Thr
1 5 10 15

Asp Leu Cys Leu Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu
20 25 30

Leu Leu Trp
35

<210> 20
<211> 105
<212> DNA
<213> Homo sapiens

<400> 20
ttgcctcctg agctaagctt taccatcttg tcctaccta atgcaactga cctttgcttg 60
gcttcatgtg tttggcagga cttgcgaat gatgaacttc tctgg 105

<210> 21
<211> 35
<212> PRT
<213> Mus musculus

<400> 21
Leu Pro Pro Glu Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Ile
1 5 10 15

Asp Leu Cys Leu Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu
20 25 30

Leu Leu Trp
35

<210> 22
<211> 105
<212> DNA
<213> Mus musculus

<400> 22
ctgcctcctg agctgagcc taccatccta tcccacctgg atgcaactga cctttgccta 60
gcttcctgtg gttggcaaga actcgctaat gatgaacttc tctgg 105

<210> 23
<211> 38
<212> PRT
<213> Mus musculus

<400> 23
Leu Pro Arg Val Leu Ser Val Tyr Ile Phe Ser Phe Leu Asp Pro Arg
1 5 10 15

Ser Leu Cys Arg Cys Ala Gln Val Ser Trp Tyr Trp Lys Ser Leu Ala
20 25 30

Glu Leu Asp Gln Leu Trp
35

<210> 24
<211> 114
<212> DNA
<213> Mus. musculus

<400> 24
cttccaaggg tgtttatctgt ctacatcttt tccttcctgg atccccggag tctttgccgt 60
tgtgcacagg tgagctggta ctggaaagagc ttggctgagt tggaccagct ctgg 114

<210> 25
<211> 38
<212> PRT
<213> Homo sapiens

<400> 25
Leu Pro Ile Asp Val Gln Leu Tyr Ile Leu Ser Phe Leu Ser Pro His
1 5 10 15
Asp Leu Cys Gln Leu Gly Ser Thr Asn His Tyr Trp Asn Glu Thr Val
20 25 30
Arg His Pro Ile Leu Trp
35

<210> 26
<211> 114
<212> DNA
<213> Homo sapiens

<400> 26
ctgccgattg atgtacagct atatattttg tcctttcttt cacctcatga tctgtgtcag 60
ttggaaagta caaatcatta ttggaatgaa actgtaagac atccaaattct ttgg 114

<210> 27
<211> 40
<212> PRT
<213> Homo sapiens

<400> 27
Leu Pro Leu Glu Leu Trp Arg Met Ile Leu Ala Tyr Leu His Leu Pro
1 5 10 15
Asp Leu Gly Arg Cys Ser Leu Val Cys Arg Ala Trp Tyr Glu Leu Ile
20 25 30
Leu Ser Leu Asp Ser Thr Arg Trp
35 40

<210> 28
<211> 120
<212> DNA
<213> Homo sapiens

<400> 28
ctccccttgg agctgtggcg catgatctta gcctacttgc accttcccga cctggggccgc 60
tgcaaggctgg tatgcagggc ctggtatgaa ctgatcctca gtctcgacag caccgcgtgg 120

<210> 29
<211> 33
<212> PRT

<213> Mus musculus

<400> 29

Leu Pro Ala Glu Ile Thr Phe Lys Ile Phe Ser Gln Leu Asp Ile Arg
1 5 10 15

Ser Leu Cys Arg Ala Ser Leu Thr Cys Arg Ser Trp Asn Asp Phe Lys
20 25 30

Ser

<210> 30

<211> 90

<212> DNA

<213> Mus musculus

<400> 30

ctgcctgcag aaatcacttt taaaatttc agtcagctgg acattcgagg tctgtgcagg 60.
gcttcattga catgcaggag ctggaatgac 90

<210> 31

<211> 38

<212> PRT

<213> Mus musculus

<400> 31

Leu Pro Leu Leu Gln Gln Pro Leu Leu Cys Ser Val Ala His Pro Ile
1 5 10 15

Ala Ser Phe Thr Met Leu Ser Tyr Leu Thr Gly Lys Glu Ala Ala His
20 25 30

Leu Ser Val Glu Leu Trp
35

<210> 32

<211> 114

<212> DNA

<213> Mus musculus

<400> 32

ctgccattac tgca cagcc acttctgtgt tctgtggctc atccccatcgc cagtttcacc 60
atgctgtcat acctcacggg aaaggaggcc gctcatctgt cagtggagtt gtgg 114

<210> 33

<211> 38

<212> PRT

<213> Mus musculus

<400> 33

Leu Pro Asp Ser Leu Val Tyr Gln Ile Phe Leu Ser Leu Gly Pro Ala
1 5 10 15

Asp Val Leu Ala Ala Gly Leu Val Cys Arg Gln Trp Gln Ala Val Ser
20 25 30

Arg Asp Glu Phe Leu Trp
35

<210> 34
<211> 114
<212> DNA
<213> Mus musculus

<400> 34
ctccccgaca gccttgtcta ccagatcttc ctgagttgg gccctgcaga tggctggct 60
gctggcgtgg tatgccgcca atggcaggct gtgtcccccggg atgagttctt atgg 114

<210> 35
<211> 31
<212> PRT
<213> Mus musculus

<400> 35
Leu Pro Glu Glu Val Leu Ala Leu Ile Phe Arg Asp Leu Pro Leu Arg
1 5 10 15
Asp Leu Ala Val Ala Thr Arg Val Cys Arg Ala Trp Ala Ala Ala
20 25 30

<210> 36
<211> 93
<212> DNA
<213> Mus musculus

<400> 36
ctgcccagg aagtgttggc gtcacatcttc cgtgaccctgc ctctcaggga ctttgctgt 60
gccaccagag tctgcaggc ctggcgccg gct 93

<210> 37
<211> 38
<212> PRT
<213> Mus musculus

<400> 37
Leu Pro Ser Val Pro Met Met Glu Ile Leu Ser Tyr Leu Asp Ala Tyr
1 5 10 15
Ser Leu Leu Gln Ala Ala Gln Val Asn Lys Asn Trp Asn Glu Leu Ala
20 25 30
Ser Ser Asp Val Leu Trp
35

<210> 38
<211> 114
<212> DNA
<213> Mus musculus

<400> 38
ttaccttagtg tgccgatgat gaaatcctc tcctatctgg atgcctacag tttgctacag 60
gctgccaag tgaacaagaa ctgaaatgaa ctgcaagca gtatgtcct gtgg 114

<210> 39
<211> 38
<212> PRT
<213> Mus musculus

<400> 39
Met Pro Ser Glu Ile Leu Val Lys Ile Leu Ser Tyr Leu Asp Ala Val
1 5 10 15

Thr Leu Val Cys Ile Gly Cys Val Ser Arg Arg Phe Tyr His Leu Ala
20 25 30

Asp Asp Asn Leu Ile Trp
35

<210> 40
<211> 114
<212> DNA
<213> Mus musculus

<400> 40
atgccatcg aaatcttggt gaagatactt tcttacttgg atgcgggtgac cttgggtgtgc 60
attggatgtg tgagcagacg cttttatcat ttggctgtatg acaatcttat ttgg 114

<210> 41
<211> 43
<212> PRT
<213> Homo sapiens

<400> 41
Leu Pro Met Glu Val Leu Met Tyr Ile Phe Arg Trp Val Val Ser Ser
1 5 10 15
Asp Leu Asp Leu Arg Ser Leu Glu Gln Leu Ser Leu Val Cys Arg Gly
20 25 30
Phe Tyr Ile Cys Ala Arg Asp Pro Glu Ile Trp
35 40

<210> 42
<211> 129
<212> DNA
<213> Homo sapiens

<400> 42
ctgccaatgg aggtcctgat gtacatcttc cgatgggtgg tgtctagtga cttggacctc 60
agatcattgg agcagttgtc gctgggtgtgc agagggttct acatctgtgc cagagaccct 120
gaaatatgg 129

<210> 43
<211> 18
<212> PRT
<213> Mus musculus

<400> 43
Leu Ser Leu Val Cys Arg Gly Phe Tyr Ile Cys Ala Arg Asp Pro Glu
1 5 10 15

Ile Trp

<210> 44
<211> 81
<212> DNA
<213> Mus musculus

<400> 44
gacttggacc tcagatcggt agagcagttg tcactggtgt gcagaggatt ctatatctgt 60
gccagagacc ctgaaatctg g 81

<210> 45
<211> 31
<212> PRT
<213> Homo sapiens

<400> 45
Leu Pro Tyr Glu Leu Ala Ile Asn Ile Phe Xaa Tyr Leu Asp Arg Lys
1 5 10 15
Glu Leu Gly Arg Cys Ala Gln Val Ser Lys Thr Trp Glu Gly Asp
20 25 30

<210> 46
<211> 93
<212> DNA
<213> Homo sapiens

<400> 46
ctgccttacg aattggcaat caatatattt agtatctgga cagggaaagaa ctaggaagat 60
gtgcacaggt gagcaagacg tggaaagggt att 93

<210> 47
<211> 38
<212> PRT
<213> Homo sapiens

<400> 47
Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe Arg Leu Leu Asp Val Arg
1 5 10 15
Ser Val Leu Ser Leu Ser Ala Val Cys Arg Asp Leu Phe Thr Ala Ser
20 25 30
Asn Asp Pro Leu Leu Trp
35

<210> 48
<211> 114
<212> DNA
<213> Homo sapiens

<400> 48
ctcccatgg aactgaaact acggatcttc cgacttctgg atgttcgttc cgtcttgtct 60
ttgtctgcgg tttgtcgtga cctctttact gcttcaaatg acccactcct gtgg 114

<210> 49
<211> 38
<212> PRT
<213> Mus musculus

<400> 49
Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe Arg Leu Leu Asp Val His
1 5 10 15

Ser Val Leu Ala Leu Ser Ala Val Cys His Asp Leu Leu Ile Ala Ser
20 25 30

Asn Asp Pro Leu Leu Trp
35

<210> 50
<211> 114
<212> DNA
<213> Mus musculus

<400> 50
cttccactgg agctgaaaact acgcacatcttc cgactttgg atgttcattc tgtcctggcc 60
ctgtctgcag tctgtcatga cctcctcatt gcgtcaaatg acccaactgct gtgg 114

<210> 51
<211> 456
<212> PRT
<213> Homo sapiens

<400> 51
Ser Ala Met Val Phe Ser Asn Asn Asp Glu Gly Leu Ile Asn Lys Lys
1 5 10 15

Leu Pro Lys Glu Leu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val
20 25 30

Thr Leu Cys Arg Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala
35 40 45

Leu Asp Gly Ser Asn Trp Gln Arg Ile Asp Leu Phe Asn Phe Gln Ile
50 55 60

Asp Val Glu Gly Arg Val Val Glu Asn Ile Ser Lys Arg Cys Gly Gly
65 70 75 80

Phe Leu Arg Lys Leu Ser Leu Arg Gly Cys Ile Gly Val Gly Asp Ser
85 90 95

Ser Leu Lys Thr Phe Ala Gln Asn Cys Arg Asn Ile Glu His Leu Asn
100 105 110

Leu Asn Gly Cys Thr Lys Ile Thr Asp Ser Thr Cys Tyr Ser Leu Ser
115 120 125

Arg Phe Cys Ser Lys Leu Lys His Leu Asp Leu Thr Ser Cys Val Ser
130 135 140

Ile Thr Asn Ser Ser Leu Lys Gly Ile Ser Glu Gly Cys Arg Asn Leu
145 150 155 160

Glu Tyr Leu Asn Leu Ser Trp Cys Asp Gln Ile Thr Lys Asp Gly Ile
165 170 175

Glu Ala Leu Val Arg Gly Cys Arg Gly Leu Lys Ala Leu Leu Leu Arg
180 185 190

Gly Cys Thr Gln Leu Glu Asp Glu Ala Leu Lys His Ile Gln Asn Tyr
 195 200 205
 Cys His Glu Leu Val Ser Leu Asn Leu Gln Ser Cys Ser Arg Ile Thr
 210 215 220
 Asp Glu Gly Val Val Gln Ile Cys Arg Gly Cys His Arg Leu Gln Ala
 225 230 235 240
 Leu Cys Leu Ser Gly Cys Ser Asn Leu Thr Asp Ala Ser Leu Thr Ala
 245 250 255
 Leu Gly Leu Asn Cys Pro Arg Leu Gln Ile Leu Glu Ala Ala Arg Cys
 260 265 270
 Ser His Leu Thr Asp Ala Gly Phe Thr Leu Leu Ala Arg Asn Cys His
 275 280 285
 Glu Leu Glu Lys Met Asp Leu Glu Glu Cys Ile Leu Ile Thr Asp Ser
 290 295 300
 Thr Leu Ile Gln Leu Ser Ile His Cys Pro Lys Leu Gln Ala Leu Ser
 305 310 315 320
 Leu Ser His Cys Glu Leu Ile Thr Asp Asp Gly Ile Leu His Leu Ser
 325 330 335
 Asn Ser Thr Cys Gly His Glu Arg Leu Arg Val Leu Glu Leu Asp Asn
 340 345 350
 Cys Leu Leu Ile Thr Asp Val Ala Leu Glu His Leu Glu Thr Ala Glu
 355 360 365
 Ala Trp Ser Ala Ser Ser Cys Thr Thr Ala Ser Arg Leu Pro Val Gln
 370 375 380
 Ala Ser Ser Gly Cys Gly Leu Ser Ser Leu Met Ser Lys Ser Thr Pro
 385 390 395 400
 Thr Leu Leu Pro Ser Pro His Arg Gln Gln Trp Gln Glu Val Asp Ser
 405 410 415
 Asp Cys Ala Gly Ala Val Ser Phe Ser Asp Ser Ser Cys Leu Gly Pro
 420 425 430
 Arg Gly Asp Glu Ala Ser Phe Pro Leu Glu Asp Leu Ser Leu Pro Asp
 435 440 445
 Arg Leu His His His Pro Ile Cys
 450 455

<210> 52
 <211> 1230
 <212> DNA
 <213> Homo sapiens

<400> 52
 ttcggccatg gttttctcaa acaatgatga aggccttatt aacaaaaagt tacccaaaga 60
 acttctgtta agaatatttt cttcttgga tatagtaact ttgtgccat gtgcacagat 120
 ttccaaggct tggAACATCT tagccctgga tggAGCAAC tggAAAGAA tagatTTT 180
 taaccttcaa atagatgttag aggtcgagt ggtggaaaat atctcgaagc gatgcgggtgg 240

attcctgagg	aagctcagct	tgcgaggctg	cattgggttt	ggggattcct	ccttgaagac	300
cttgcacag	aactgcgaa	acattgaaca	tttgaacctc	aatggatgca	aaaaaatcac	360
tgacagcacg	tgttatagcc	ttagcagatt	ctgttccaag	ctgaaaacatc	tggatctgac	420
ctccctgtgt	tctattacaa	acagtcctt	gaaggggatc	agtgagggtct	gccgaaacct	480
ggagttacctg	aacctctctt	ggtgtgatca	gatcacgaag	gatggcatcg	aggcactgtt	540
gcgagggtgt	cgaggcctga	aagccctgct	cctgaggggc	tgcacacagt	tagaagatga	600
agctctgaaa	cacattcaga	attactgcca	tgagcttgg	agcctaact	tgcagtccctg	660
ctcacgtatc	acggatgaag	gtgtggtgca	gatatgcagg	ggctgtcacc	ggctacaggc	720
tctctgcctt	tcgggttgca	gcaaacctcac	agatgcctct	cttacagccc	tgggtttgaa	780
ctgtccgcga	ctgcaaattt	tggaggctgc	ccgatgctcc	catttgactg	acgcagggtt	840
tacacttta	gctcggaaatt	gccacgaatt	ggagaagatg	gatcttgaag	aatgcatcct	900
gataaccgac	agcacactca	tccagcttc	cattcactgt	cctaaaactgc	aaggcccttag	960
cctgtcccac	tgtgaactca	tcacagatga	tgggatccctg	cacctgagca	acagtaacctg	1020
tggccatgag	aggctgcggg	tactggagtt	ggacaactgc	ctccctcatca	ctgatgtggc	1080
cctggAACAC	ctagaaactg	ccgaggcctg	gagcgcctcg	agctgtacga	ctgcccagcag	1140
gttaccctgt	caggcatcaa	gcccgtgcgg	gctcagctcc	ctcatgtcaa	agtccacgc	1200
tactttgctc	ccgtcacc	accgacagca				1230

<210> 53
<211> 380
<212> PRT
<213> *Homo sapiens*

<400> 53
 Arg Pro Arg Phe Gly Thr Ser Asp Ile Glu Asp Asp Ala Tyr Ala Glu
 1 5 10 15

Lys Asp Gly Cys Gly Met Asp Ser Leu Asn Lys Lys Phe Ser Ser Ala
 20 25 30

Val Leu Gly Glu Gly Pro Asn Asn Gly Tyr Phe Asp Lys Leu Pro Tyr
 35 40 45

Glu Leu Ile Gln Leu Ile Leu Asn His Leu Thr Leu Pro Asp Leu Cys
50 55 60

Arg Leu Ala Gln Thr Cys Lys Leu Leu Ser Gln His Cys Cys Asp Pro
65 70 75 80

Leu Gln Tyr Ile His Leu Asn Leu Gln Pro Tyr Trp Ala Lys Leu Asp
85 90 95

Asp Thr Ser Leu Glu Phe Leu Gln Ser Arg Cys Thr Leu Val Gln Trp

Leu Asn Leu Ser Trp Thr Gly Asn Arg Gly Phe Ile Ser Val Ala Gly

Phe Ser Arg Phe Leu Lys Val Cys Gly Ser Glu Leu Val Arg Leu Glu

Leu Ser Cys Ser His Phe Leu Asn Glu Thr Cys Leu Glu Val Ile Ser
100 155 160

Glu Met Cys Pro Asn Leu Gln Ala Leu Asn Leu Ser Ser Cys Asp Lys
165 170 175

Leu Pro Pro Gln Ala Phe Asn His Ile Ala Lys Leu Cys Ser Leu Lys

Arg Leu Val Leu Tyr Arg Thr Lys Val Glu Gln Thr Ala Leu Leu Ser

Ile Leu Asn Phe Cys Ser Glu Leu Gln His Leu Ser Leu Gly Ser Cys
 210 215 220
 Val Met Ile Glu Asp Tyr Asp Val Ile Ala Ser Met Ile Gly Ala Lys
 225 230 235 240
 Cys Lys Lys Leu Arg Thr Leu Asp Leu Trp Arg Cys Lys Asn Ile Thr
 245 250 255
 Glu Asn Gly Ile Ala Glu Leu Ala Ser Gly Cys Pro Leu Leu Glu Glu
 260 265 270
 Leu Asp Leu Gly Trp Cys Pro Thr Leu Gln Ser Ser Thr Gly Cys Phe
 275 280 285
 Thr Arg Leu Ala His Gln Leu Pro Asn Leu Gln Lys Leu Phe Leu Thr
 290 295 300
 Ala Asn Arg Ser Val Cys Asp Thr Asp Ile Asp Glu Leu Ala Cys Asn
 305 310 315 320
 Cys Thr Arg Leu Gln Gln Leu Asp Ile Leu Gly Lys Val Thr Ile Tyr
 325 330 335
 Lys Phe Val Leu Asn Val Cys Phe Leu Asp Arg Lys Ala Asn Leu Arg
 340 345 350
 Leu Phe Val Arg Lys Lys Ile Phe Gly Tyr Asn Lys Asn Phe Ile
 355 360 365
 Leu Ile Arg Trp Leu Gly Leu Ile Gly Asn Ala Arg
 370 375 380

<210> 54
 <211> 1380
 <212> DNA
 <213> Homo sapiens

<400> 54
 aggccaagat tcggcacgag tgatatataga a gatgatgcct atgcagaaaa ggatggttgt 60
 ggaatggaca gtcttaacaa aaagtttagc agtgctgtcc tcgggaaagg gccaaataat 120
 gggtattttg ataaaactacc ttatgagctt attcagctga ttctgaatca tcttacacta 180
 ccagacctgt gtagatttagc acagacttgc aaactactga gccagcattg ctgtgatcct 240
 ctgcaataca tccaccta a tctgcaacca tactggcaa aactagatga cacttctctg 300
 gaatttctac agtctcgctg cacttgc c agtggctta atttatctt gactggcaat 360
 agaggcttca tctctgtgc aggatttagc aggtttctga aggtttgtgg atccgaatta 420
 gtacgcctt aatttgtttt cagccacttt cttaatgaaa ctgctttaga agttattttct 480
 gagatgtgtc caaatctaca ggccttaat ctctcctcct gtgataagct accacccaa 540
 gcttcaacc acattgccaa gttatgcagc cttaaacgac ttgttctcta tcgaacaaaa 600
 gtagagcaaa cagcactgtc cagcatttt aacttctgtt cagagcttca gcacccagt 660
 tttagcagtt gtgtcatgtat tgaagactat gatgtgatag cttagcatgtat aggagccaa 720
 tggaaaaaac tccggaccct ggatctgtgg agatgtaga atattactga gaatgaaata 780
 gcagaactgg cttctgggtg tccactactg gaggagctt accttggctg gtgcccaact 840
 ctgcagagca gcaccgggtg cttcaccaga ctggcacacc agtccccaaa cttgcaaaaa 900
 ctcttccta cagctaatacg atctgtgtt gacacagaca ttgtgaatt ggcatgtaat 960
 tgtaccaggt tacagcagct ggacatatta ggtaaggtt caatatataa atttgtttta 1020
 aatgtctgtt tccttgacag aaaagccaa ctcagacttt ttgttaggaa aaagaaaatt 1080
 tttgatataca ataaaaattt tattcctgata agatggctt gtttgcattt aatgccaga 1140

tagatcagtt aatataggga ataatttat atgtacttta ataaaatagt gaggacaata 1200
acaattttat agttgaactg taaaaaacta taaccattaa ttcttggct acttgttaga 1260
gtgagaattt acatgagctg cgctcttat ttttattaag gagagaagaa attaattcat 1320
ttgtataatg aattcaagct agttttttt aagtttctta attaagcggc cgcaagctta 1380

<210> 55
<211> 519
<212> PRT
<213> Homo sapiens

<400> 55
Met Val Ile Met Leu Glx Glu Arg Gln Lys Phe Phe Lys Tyr Ser Val
1 5 10 15
Asp Glu Lys Ser Asp Lys Glu Ala Glu Val Ser Glu His Ser Thr Gly
20 25 30
Ile Thr His Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu
35 40 45
Asn Pro Gln Glu Leu Cys Arg Cys Ser Gln Val Ser Met Lys Trp Ser
50 55 60
Gln Leu Thr Lys Thr Gly Ser Leu Trp Lys His Leu Tyr Pro Val His
65 70 75 80
Trp Ala Arg Gly Asp Trp Tyr Ser Gly Pro Ala Thr Glu Leu Asp Thr
85 90 95
Glu Pro Asp Asp Glu Trp Val Lys Asn Arg Lys Asp Glu Ser Arg Ala
100 105 110
Phe His Glu Trp Asp Glu Asp Ala Asp Ile Asp Glu Ser Glu Glu Ser
115 120 125
Ala Glu Glu Ser Ile Ala Ile Ser Ile Ala Gln Met Glu Lys Arg Leu
130 135 140
Leu His Gly Leu Ile His Asn Val Leu Pro Tyr Val Gly Thr Ser Val
145 150 155 160
Lys Thr Leu Val Leu Ala Tyr Ser Ser Ala Val Ser Ser Lys Met Val
165 170 175
Arg Gln Ile Leu Glu Leu Cys Pro Asn Leu Glu His Leu Asp Leu Thr
180 185 190
Gln Thr Asp Ile Ser Asp Ser Ala Phe Asp Ser Trp Ser Trp Leu Gly
195 200 205
Cys Cys Gln Ser Leu Arg His Leu Asp Leu Ser Gly Cys Glu Lys Ile
210 215 220
Thr Asp Val Ala Leu Glu Lys Ile Ser Arg Ala Leu Gly Ile Leu Thr
225 230 235 240
Ser His Gln Ser Gly Phe Leu Lys Thr Ser Thr Ser Lys Ile Thr Ser
245 250 255
Thr Ala Trp Lys Asn Lys Asp Ile Thr Met Gln Ser Thr Lys Gln Tyr
260 265 270

Ala Cys Leu His Asp Leu Thr Asn Lys Gly Ile Gly Glu Glu Ile Asp
 275 280 285
 Asn Glu His Pro Trp Thr Lys Pro Val Ser Ser Glu Asn Phe Thr Ser
 290 295 300
 Pro Tyr Val Trp Met Leu Asp Ala Glu Asp Leu Ala Asp Ile Glu Asp
 305 310 315 320
 Thr Val Glu Trp Arg His Arg Asn Val Glu Ser Leu Cys Val Met Glu
 325 330 335
 Thr Ala Ser Asn Phe Ser Cys Ser Thr Ser Gly Cys Phe Ser Lys Asp
 340 345 350
 Ile Val Gly Leu Arg Thr Ser Val Cys Trp Gln Gln His Cys Ala Ser
 355 360 365
 Pro Ala Phe Ala Tyr Cys Gly His Ser Phe Cys Cys Thr Gly Thr Ala
 370 375 380
 Leu Arg Thr Met Ser Ser Leu Pro Glu Ser Ser Ala Met Cys Arg Lys
 385 390 395 400
 Ala Ala Arg Thr Arg Leu Pro Arg Gly Lys Asp Leu Ile Tyr Phe Gly
 405 410 415
 Ser Glu Lys Ser Asp Gln Glu Thr Gly Arg Val Leu Leu Phe Leu Ser
 420 425 430
 Leu Ser Gly Cys Tyr Gln Ile Thr Asp His Gly Leu Arg Val Leu Thr
 435 440 445
 Leu Gly Gly Leu Pro Tyr Leu Glu His Leu Asn Leu Ser Gly Cys
 450 455 460
 Leu Thr Ile Thr Gly Ala Gly Leu Gln Asp Leu Val Ser Ala Cys Pro
 465 470 475 480
 Ser Leu Asn Asp Glu Tyr Phe Tyr Tyr Cys Asp Asn Ile Asn Gly Pro
 485 490 495
 His Ala Asp Thr Ala Ser Gly Cys Gln Asn Leu Gln Cys Gly Phe Arg
 500 505 510
 Ala Cys Cys Arg Ser Gly Glu
 515

<210> 56
 <211> 2276
 <212> DNA
 <213> Homo sapiens

<400> 56
 atggtaatca tgctgttata gcgacagaaaa ttttttaaat attccgttggaa tgaaaagtca 60
 gataaagaag cagaagtgtc agaacactcc acaggatataa cccatcttcc tcctgaggtt 120
 atgcgttcaa ttttcagcta tcttaatcct caagagttat gtgcgttgttca tcaagatgtt 180
 atgaaatgggt ctcagctgac aaaaacggga tcgctttggaa aacatcttta ccctgttcat 240
 tggggccagag gtgactggta tagtggtccc gcaactgaac ttgataactga acctgtatgtat 300
 gaatgggtga aaaataggaa agatgaaagt cgtgctttc atgagtggttca tgaagatgtt 360
 gacattgtat aatctgaaga gtctgcggag gaatcaattt ctatcagcat tgcacaaatgt 420

gaaaaacgtt tactccatgg ctttaattcat aacgttctac catatgttgg tacttctgt 480
 aaaaccttag tattagcata cagctctgca gtttccagca aaatggtag gcagattta 540
 gagcttgc ctaacctgga gcatctggat cttacccaga ctgacatcc agattctgca 600
 tttgacagtt ggtcttgct tggttgctgc cagagtcttc ggcacatcc tctgtctgg 660
 tttgagaaaa tcacagatgt ggccttagag aagatttcca gagctctgg aattctgaca 720
 tctcatcaaa gtggctttt gaaaacatct acaagcaaaa ttacttcaac tgcgtgaaa 780
 aataaagaca ttaccatgca gtccaccaag cagtatgcct gttgcacga tttaactaac 840
 aaggcattg gagaagaat agataatgaa cacccttggaa ctaagcctgt ttcttcgag 900
 aatttcactt ctccttatgt gtggatgtt gatgctgaaag atttggctga tattgaagat 960
 actgtggaaat ggagacatag aaatgttcaa agtcttgcg taatggaaac agcatccaac 1020
 ttttagtttgc ccacctctgg ttgttttagt aaggacattt ttggactaag gactagtgtc 1080
 ttttggcagc agcattgtgc ttctccagcc tttgcgtatt gtggctactc attttgttgc 1140
 acaggaacag cttaagaac tatgtcatca ctcccagaat ctctgcata gtgtagaaaa 1200
 gcagcaagga cttagattgcc tagggaaaa gacttaattt actttggag tgaaaaatct 1260
 gatcaagaga ctggacgtgt acttctgtt ctcagttat ctggatgtt tcaagatcaca 1320
 gaccatggtc tcagggtttt gactctggga ggagggtcgc cttatggaa gcaccta 1380
 ctctctggtt gtcttactat aactggtgca ggcctgcagg atttggtttgc agcatgtcct 1440
 tctctgaatg atgaataactt ttactactgt gacaacatta acgtcctca tgctgataacc 1500
 gccagtggtt gccagaattt gcagtgtgtt ttgcagctt gctccgcgc tggcgaatga 1560
 cccttgactt ctgatcttgc tctacttcat ttagctgagc aggttttctt tcatgcactt 1620
 tactcatagc acatttcttgc tgtaaaccat cccttttgc gctgacttgc ttttggcccc 1680
 atttcttaca acttcagaaa tcttaatttgc ccagtgaattt gtaatgttgc ttctcttgca 1740
 aattataactt ttggtttgc aaggatttttgc ttttttcaaa aagggtgaga acagtcttac 1800
 atttttttttaaatgaaat gcttaaaga atgttggtaa tgcatgtca tttaaagttat 1860
 ttcatagata attttgagtt taaaagtccaa tggaggttgc tgggtctt tacacattaa 1920
 cactgtacca agctttgcag atctttccg acacacatgt ctgaagactt attttcaaa 1980
 acagcacattt tttggaaactt aatcttttgc ccgtaatattt tcctttatccaaatgattct 2040
 cagaaggccaa attcaaaacaa acccacattt aaggtttttgc aggattatag aataaaattgg 2100
 cttctgagtg ttagctcagt gaggtagaaa gcaccaatcg atatttgc tctttagggaa 2160
 tactttgttc tcaccactgtt ccctatgtca tcaaaatttgc gagagatttttgc taaaatacc 2220
 acaatcattt gaagaaatgttataataaa tctactttgc ggacttttacc aagttaa 2276

<210> 57

<211> 39

<212> PRT

<213> Homo sapiens

<400> 57

Leu	Pro	Leu	Glu	Leu	Ser	Phe	Tyr	Leu	Leu	Lys	Trp	Leu	Asp	Pro	Gln
1		5						10					15		

Thr	Leu	Leu	Thr	Cys	Cys	Leu	Val	Ser	Lys	Gln	Trp	Asn	Lys	Val	Ile
			20				25					30			

Ser	Ala	Cys	Thr	Glu	Val	Trp
			35			

<210> 58

<211> 117

<212> DNA

<213> Homo sapiens

<400> 58

cttcccttgg	agctcagttt	ttatttgc	aaatggctcg	atcctcagac	tttactcaca	60
tgcgtccgc	tctctaaaca	gtgaaataag	gtgataagtgc	cctgtacaga	ggtgtgg	117

<210> 59

<211> 10

<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 59
aattcgcgcg 10

<210> 60
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 60
Lys Lys Glu Arg Leu Leu Asp Asp Arg His Asp Ser Gly Leu Asp Ser
1 5 10 15

Met Lys Asp Glu Glu
20